

Amdt. dated August 25, 2005
Reply to Office action of June 9, 2004

Serial No. 09/398,378
Docket No. BO999030
Firm No. 0036.0044

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A method for processing a job, comprising:
generating, with a computing system, a signal when status for the job is changed from a first status to a second status in a job status table, wherein each status for the job is associated with a single work process for processing the job among multiple work processes, wherein each status refers to a next process to be performed by the single work process associated with the status, wherein each work process is an application program, wherein the job status table identifies jobs on which work is performed, and wherein the signal is generated by an event trigger in a database at the computing system that is invoked in response to the change in status of the job in the job status table;
identifying using a mapping, with a user defined function, a single work process for processing the job based on the second status, wherein the second status is associated with the identified work process, wherein the user defined function is invoked by the event trigger with the second job status and wherein the mapping maps an input status of a job to a work process;
notifying, with the user defined function, the work process associated with the second status that one job had its status changed to the second status in response to the signal;
processing, with the work process, the job that had its status changed from the first status to the second status, wherein the work process queries the job status table to identify the job having the second status which is associated with that work process and to obtain job information in response to the notification; and
modifying, with the work process, the status of the job in the job status table after completing the processing of the job, wherein each work process is associated with one input status and one or more output statuses, wherein the modified status of the job is associated with another work process, [[and]] wherein the mapping may be modified to perform at least one of

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adding, removing, and modifying statuses associated with work processes to modify an order of the job processing, and wherein the job is processed in a just-in-time manner.

2. (Previously Presented) The method of claim 1, wherein the signal is transmitted to a routing process and indicates the second status, further comprising:

processing with the routing process the mapping associating each status with one work process in response to receiving the signal; and

determining from the mapping one work process associated with the second status, wherein the determined work process is notified of the job.

3. (Previously Presented) The method of claim 1, wherein job status is maintained in a database table including information on the job, further comprising maintaining, with the work process, a connection with the database that enables communication with the database table, wherein modifying the status of the job with the work process after completing processing comprises updating the status of the job with the work process to an output status associated with another work process, and wherein updating the status with the output status generates the signal indicating a change in status.

4. (Cancelled) The method of claim 3, wherein the signal is generated by an event trigger in the database at the computing system that responds to an update to the status of the job in the database table.

5. (Previously Presented) The method of claim 3, wherein there are multiple work processes, wherein each work process is enabled to update the job status with one associated output status after completing the processing of the job, wherein the output status for one work process is the input status associated with one other work process, and wherein the definition of input and output statuses for work processes, defines the workflow of the job.

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6. (Previously Presented) The method of claim 3, further comprising the work process performing:

determining, with the computing system, whether the work process completed processing the job successfully; and

updating, with the computing system, the status of the job to an error status if the work process did not complete processing the job successfully, wherein the status of the job is updated with one output status associated with the work process if the job work process completed processing the job successfully.

7. (Currently Amended) A method for processing a job, comprising;

generating a signal, with a computing system, when status for the job is changed from a first status to a second status in a database table, wherein each status for the job is associated with a single work process for processing the job among multiple work processes, wherein each status refers to a next process to be performed by the single work process associated with the status, wherein each work process is an application program, wherein the database table identifies jobs on which work is performed, and wherein the signal is generated by an event trigger in a database at the computing system that is invoked in response to the change in status of the job in the job status table;

identifying using a mapping, with a user defined function, a single work process for processing the job based on the second status, wherein the second status is associated with the identified work process, wherein the user defined function is invoked by the event trigger with the second job status and wherein the mapping maps an input status of a job to a work process;

notifying, with the user defined function, the work process associated with the second status that one job had its status changed to the second status in response to the signal in response to the notification;

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processing, with the work process, the job that had its status changed from the first status to the second status, wherein the work process queries the database table to identify the job having the second status which is associated with that work process and to obtain job information;

modifying, with the work process, the status of the job in the database table after completing the processing of the job, wherein each work process is associated with one input status and one or more output statuses, wherein the modified status of the job is associated with another work process, [[and]] wherein the mapping may be modified to perform at least one of adding, removing, and modifying statuses associated with work processes to modify an order of the job processing, and wherein the job is processed in a just-in-time manner;

wherein job status is maintained in the database table including information on the job and maintaining, with the work process, a connection with the database that enables communication with the database table, wherein modifying the status of the job after completing processing comprises updating the status of the job to an output status associated with another work process, and wherein updating the status with the output status generates the signal indicating a change in status;

wherein the work process further comprises performing:

determining whether the work process completed processing the job successfully;

and

updating the status of the job to an error status if the work process did not complete processing the job successfully, wherein the status of the job is updated with one output status associated with the work process if the job work process completed processing the job successfully; and

wherein an error work process is associated with the error status, wherein updating the job to the error status causes the notification of the error work process, and wherein the error work process further comprises performing:

performing error recovery operations on the job;

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determining whether the error recovery operations corrected the job; and
setting the jobs status of the corrected job to a first possible status in the workflow.

8. (Previously Presented) The method of claim 3, wherein the work process further performs:

processing the jobs having the status associated with the work process;
terminating processing of the database table if there are no further jobs in the database table having the status associated with the work process; and
querying the database table for additional jobs after receiving the notification.

9. (Previously Presented) The method of claim 8, wherein the work process spawns a work thread to process one job in the database table having the status associated with the work process, wherein the work process is capable of spawning multiple work threads to process different jobs having the status associated with the work process.

10. (Previously Presented) The method of claim 1, wherein the job comprises a data file, wherein at least one work process processes the data file to alter its format and at least one other work process processes the data file in the altered format to transmit the data file to an output device.

11. (Previously Presented) The method of claim 10, wherein at least two work processes process the job at different devices in communication over a network, further comprising accessing the job, with one of the work processes, from another device over the network to process the job at the device on which that work process executes.

12. (Previously Presented) The method of claim 1, further comprising:

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adding, with the computing system, a status update to a list providing status updates for each job; and

using the list to determine how the job has been processed by the work processes.

13. (Currently Amended) A system for processing a job, comprising;

means for generating, with a computing system, a signal when status for the job is changed from a first status to a second status in a job status table, wherein each status for the job is associated with a single work process for processing the job among multiple work processes, wherein each status refers to a next process to be performed by the single work process associated with the status, wherein each work process is an application program, wherein the job status table identifies jobs on which work is performed, and wherein the signal is generated by an event trigger in a database at the computing system that is invoked in response to the change in status of the job in the job status table;

means for identifying using a mapping, with a user defined function, a single work process for processing the job based on the second status, wherein the second status is associated with the identified work process, wherein the user defined function is invoked by the event trigger with the second job status and wherein the mapping maps an input status of a job to a work process;

means for notifying, with the user defined function, the work process associated with the second status that one job had its status changed to the second status in response to the signal in response to the notification;

means for processing, with the work process, the job that had its status changed from the first status to the second status, wherein the work process queries the job status table to identify the job having the second status which is associated with that work process and to obtain job information; and

means for modifying, with the work process, the status of the job in the job status table after completing the processing of the job, wherein each work process is associated with one

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input status and one or more output statuses, wherein the modified status of the job is associated with another work process, ~~[[and]]~~ wherein the mapping may be modified to perform at least one of adding, removing, and modifying statuses associated with work processes to modify an order of the job processing, and wherein the job is processed in a just-in-time manner.

14. (Previously Presented) The system of claim 13, wherein the signal is transmitted to a routing process and indicates the second status, further comprising:

means for processing with the routing process the mapping associating each status with one work process in response to receiving the signal; and

mean for determining from the mapping one work process associated with the second status, wherein the determined work process is notified of the job.

15. (Previously Presented) The system of claim 13, wherein job status is maintained in a database table including information on the job, further comprising means for maintaining, with the work process, a connection with the database that enables communication with the database table, wherein the means for modifying the status of the job, with the work process, after completing processing comprises updating the status of the job to an output status associated with another work process, and wherein the means for updating, with the work process, the status with the output status generates the signal indicating a change in status.

16. (Cancelled) The system of claim 15, wherein the signal is generated by an event trigger in the database that responds to an update to the status of the job in the database table.

17. (Previously Presented) The system of claim 15, wherein there are multiple work processes, wherein each work process is enabled to update the job status with one associated output status after completing the processing of the job, wherein the output status for one work

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process is the input status associated with one other work process, and wherein the definition of input and output statuses for work processes defines the workflow of the job.

18. (Previously Presented) The system of claim 15, further comprising:
means for determining, with the computing system, whether the work process completed processing the job successfully; and
means for updating the status of the job to an error status if the work process did not complete processing the job successfully, wherein the status of the job is updated with one output status associated with the work process if the job work process completed processing the job successfully.

19. (Currently Amended) A system for processing a job, comprising:
means for generating, with a computing system, a signal when status for the job is changed from a first status to a second status in a database table, wherein each status for the job is associated with a single work process for processing the job among multiple work processes, wherein each status refers to a next process to be performed by the single work process associated with the status, wherein each work process is an application program, wherein the database table identifies jobs on which work is performed, and wherein the signal is generated by an event trigger in a database at the computing system that is invoked in response to the change in status of the job in the job status table;

means for identifying using a mapping, with a user defined function, a single work process for processing the job based on the second status, wherein the second status is associated with the identified work process, wherein the user defined function is invoked by the event trigger with the second job status and wherein the mapping maps an input status of a job to a work process;

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means for notifying, with the user defined function, the work process associated with the second status that one job had its status changed to the second status in response to the signal in response to the notification;

means for processing, with the work process, the job that had its status changed from the first status to the second status, wherein the work process queries the database table to identify the job having the second status which is associated with that work process and to obtain job information;

means for modifying, with the work process, the status of the job in the database table after completing the processing of the job, wherein each work process is associated with one input status and one or more output statuses, wherein the modified status of the job is associated with another work process, [[and]] wherein the mapping may be modified to perform at least one of adding, removing, and modifying statuses associated with work processes to modify an order of the job processing, and wherein the job is processed in a just-in-time manner;

wherein job status is maintained in the database table including information on the job, further comprising means for maintaining, with the work process, a connection with the database that enables communication with the database table, wherein the means for modifying the status of the job after completing processing comprises updating the status of the job to an output status associated with another work process, and wherein the means for updating the status with the output status generates the signal indicating a change in status;

means for determining whether the work process completed processing the job successfully;

means for updating the status of the job to an error status if the work process did not complete processing the job successfully, wherein the status of the job is updated with one output status associated with the work process if the job work process completed processing the job successfully; and

wherein an error process is associated with the error status, wherein updating the job to the error status causes the notification of the error work process, further comprising:

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means for performing error recovery operations on the job;
means for determining whether the error recovery operations corrected the job; and
means for setting the jobs status of the corrected job to a first possible status in the workflow.

20. (Previously Presented) The system of claim 15, further comprising:
means for querying the database table for jobs having the status associated with the work process;
means for processing the jobs having the status associated with the work process;
means for terminating processing of the database table if there are no further jobs in the database table having the status associated with the work process; and
means for querying the database table for additional jobs after receiving the notification.

21. (Previously Presented) The system of claim 20, wherein the work process spawns a work thread to process one job in the database table having the status associated with the work process, and wherein the work process is capable of spawning multiple work threads to process different jobs having the status associated with the work process.

22. (Previously Presented) The system of claim 13, wherein the job comprises a data file, wherein at least one work process processes the data file to alter its format and at least one other work process processes the data file in the altered format to transmit the data file to an output device.

23. (Previously Presented) The system of claim 22, wherein at least two work processes process the job at different devices in communication over a network, further comprising means for accessing the job from another device over the network to process the job at the device on which that work process executes.

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24. (Original) The system of claim 13, further comprising:
means for adding a status update to a list providing status updates for each job; and
means for using the list to determine how the job has been processed by the work processes.

25. (Currently Amended) An article of manufacture for processing a job, the article of manufacture comprising computer usable media including at least one computer program and at least one work process embedded therein that causes at least one computer to perform:

generating a signal when status for the job is changed from a first status to a second status in a job status table, wherein each status for the job is associated with a single work process for processing the job among multiple work processes, wherein each status refers to a next process to be performed by the single work process associated with the status, wherein each work process is an application program, wherein the job status table identifies jobs on which work is performed, and wherein the signal is generated by an event trigger in a database at the computing system that is invoked in response to the change in status of the job in the job status table;

identifying using a mapping a single work process for processing the job based on the second status, wherein the second status is associated with the identified work process;

notifying the work process associated with the second status that one job had its status changed to the second status in response to the signal in response to the notification;

processing, with the work process, the job that had its status changed from the first status to the second status, wherein the work process queries the job status table to identify the job having the second status which is associated with that work process and to obtain job information; and

modifying, with the work process, the status of the job in the job status table after completing the processing of the job, wherein each work process is associated with one input status and one or more output statuses, wherein the modified status of the job is associated with another work process, [[and]] wherein the mapping may be modified to perform at least one of

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adding, removing, and modifying statuses associated with work processes to modify an order of the job processing, and wherein the job is processed in a just-in-time manner.

26. (Previously Presented) The article of manufacture of claim 25, wherein the signal is transmitted to a routing process and indicates the second status, further comprising:

processing with the routing process the mapping associating each status with one work process in response to receiving the signal; and

determining from the mapping one work process associated with the second status, wherein the determined work process is notified of the job.

27. (Previously presented) The article of manufacture of claim 25, wherein job status is maintained in a database table including information on the job, further comprising maintaining, with the work process, a connection with the database that enables communication with the database table, wherein modifying the status of the job after completing processing comprises updating the status of the job to an output status associated with another work process, and wherein updating the status with the output status generates the signal indicating a change in status.

28. (Cancelled) The article of manufacture of claim 27, wherein the signal is generated by an event trigger in the database that responds to an update to the status of the job in the database table.

29. (Previously Presented) The article of manufacture of claim 27, wherein there are multiple work processes, wherein each work process is enabled to update the job status with one associated output status after completing the processing of the job, wherein the output status for one work process is the input status associated with one other work process, and wherein the definition of input and output statuses for work processes defines the workflow of the job.

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30. (Previously presented) The article of manufacture of claim 27, further comprising the work process performing:

determining whether the work process completed processing the job successfully; and
updating the status of the job to an error status if the work process did not complete processing the job successfully, wherein the status of the job is updated with one output status associated with the work process if the job work process completed processing the job successfully.

31. (Currently Amended) An article of manufacture for processing a job, the article of manufacture comprising computer usable media including at least one computer program and at least one work process embedded therein that causes at least one computer to perform:

generating a signal when status for the job is changed from a first status to a second status in a database table, wherein each status for the job is associated with a single work process for processing the job among multiple work processes, wherein each status refers to a next process to be performed by the single work process associated with the status, wherein each work process is an application program, and wherein the database table identifies jobs on which work is performed, and wherein the signal is generated by an event trigger in a database at the computing system that is invoked in response to the change in status of the job in the job status table;

identifying using a mapping a single work process for processing the job based on the second status, wherein the second status is associated with the identified work process;

notifying the work process associated with the second status that one job had its status changed to the second status in response to the signal in response to the notification;

processing, with the work process, the job that had its status changed from the first status to the second status, wherein the work process queries the database table to identify the job having the second status which is associated with that work process and to obtain job information;

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modifying, with the work process, the status of the job in the database table after completing the processing of the job, wherein each work process is associated with one input status and one or more output statuses, wherein the modified status of the job is associated with another work process, [[and]] wherein the mapping may be modified to perform at least one of adding, removing, and modifying statuses associated with work processes to modify an order of the job processing, and wherein the job is processed in a just-in-time manner;

wherein job status is maintained in the database table including information on the job, further comprising maintaining, with the work process, a connection with the database that enables communication with the database table, wherein modifying the status of the job after completing processing comprises updating the status of the job to an output status associated with another work process, and wherein updating the status with the output status generates the signal indicating a change in status;

wherein the work process further comprises performing:

determining whether the work process completed processing the job successfully;

and

updating the status of the job to an error status if the work process did not complete processing the job successfully, wherein the status of the job is updated with one output status associated with the work process if the job work process completed processing the job successfully; and

wherein one work process is an error work process is associated with the error status, wherein updating the job to the error status causes the notification of the error work process, wherein the error work process further comprises performing:

performing error recovery operations on the job;

determining whether the error recovery operations corrected the job; and

setting the jobs status of the corrected job to a first possible status in the workflow.

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32. (Previously Presented) The article of manufacture of claim 27, wherein the work process further performs:

- querying the database table for jobs having the status associated with the work process;
- processing the jobs having the status associated with the work process;
- terminating processing of the database table if there are no further jobs in the database table having the status associated with the work process; and
- querying the database table for additional jobs after receiving the notification.

33. (Previously presented) The article of manufacture of claim 32, wherein the work process spawns a work thread to process one job in the database table having the status associated with the work process, wherein the work process is capable of spawning multiple work threads to process different jobs having the status associated with the work process.

34. (Previously Presented) The article of manufacture of claim 25, wherein the job comprises a data file, wherein at least one work process processes the data file to alter its format and at least one other work process processes the data file in the altered format to transmit the data file to an output device.

35. (Previously presented) The article of manufacture of claim 34, wherein at least two work processes process the job at different devices in communication over a network, further comprising accessing the job from another device over the network to process the job at the device on which that work processes executes.

36. (Previously presented) The article of manufacture of claim 25, further comprising:
adding a status update to a list providing status updates for each job; and
using the list to determine how the job has been processed by the work processes.